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The Pawnee Potato

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United States Department of Agriculture, Bureau of Plant Industry, in cooperation with the Colorado Agricultural Experiment Station.

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ORIGIN

In 1930 a potato-breeding program was inaugurated at the Colorado Potato Experiment Station, Greeley, Colo., in an effort to obtain disease-resistant varieties of potatoes and to develop better early-maturing varieties. Each year the most promising seedlings developed are tested by the Colorado Agricultural Experiment Station at substations and in farmers' fields. Seedlings are also distributed to other States that are cooperating with the United States Department of Agriculture in the national potato-breeding program.

Early-maturing varieties of potatoes are especially desired by the farmers of Colorado who grow both sugar beets and potatoes, because they can harvest early potatoes before starting to dig the sugar-beet crop. Some growers are apt to harvest late-maturing varieties before they are mature; as a result, the tubers skin badly, are of inferior quality, and present a poor appearance on the market.

The Pawnee[1] potato is a rapid-growing variety, which matures soon after Irish Cobbler and Triumph when grown for either the early or the late crop in the Greeley district. In some instances it has been almost as early as Triumph. It was developed by crossing two late-maturing varieties, Rural New Yorker No. 2 and Katahdin. The pedigree of Pawnee follows:

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[1] The name of scenic buttes located in Weld County, Colorado, where this variety originated. Pawnee is also the name of a tribe of American Indians that formerly roamed the Plains region from Nebraska to Texas.

Pawnee (U. S. D. A.-Colo. seedling No. 1608).
- Katahdin
  - U. S. D. A. seedling No. 24642.
    - Sutton Flourball.
    - Aroostook Wonder.
  - U. S. D. A. seedling No. 40568.
    - Busola.
    - Rural New Yorker No. 2.
- Rural New Yorker No. 2.

DESCRIPTION

Plants.—Medium in size, spreading; stems medium thick, medium angled; nodes slightly swollen, dark green; internodes short, tinged with purple; wings dark green; stipules small, dark green, slightly pubescent; leaves long, medium broad; midrib green tinged with purple, slightly pubescent; primary leaflets (four pairs) close, dark green, large ovate; mean length of blade 59.92 ± 0.78 mm. (2.35 inches); mean width 37.09 ± 0.52 mm. (1.46 inches); index 62.13 ± 0.47;[2] leaflet petioles green, slightly purple; secondary leaflets medium in number between pairs of primary leaflets; tertiary leaflets few; leafy bracts none; peduncles short, slightly pubescent; pedicels medium in length, slightly pigmented, pubescent.

Flowers.—Calyx lobe tips medium in length, green, heavily pigmented, sparsely pubescent; corolla medium in size, petunia violet;[3] margins and under sides of tips white or nearly so; anthers orange yellow; pollen scant, good; style straight; stigma globose, green.

Tubers.—Short elliptical to roundish, medium thick; mean length 86.21 ± 0.52 mm. (3.39 inches);[4] mean width 81.17 ± 0.38 mm. (3.20 inches); mean thickness 55.13 ± 0.30 mm. (2.17 inches); mean indexes: width to length 94.41 ± 0.81,[5] thickness to width 67.98 ± 0.49, and thickness to length 64.18 ± 0.47; skin smooth, self-colored, varying from cream to dark-cream buff, depending on type of soil where grown; eyes shallow, same color as skin; eyebrows medium long, curved, medium prominent; flesh white; sprouts colored when developed in the dark; tips of leaf scales dark anthracene violet;[3] body and base of lateral leaf scales without color; maturity medium early.

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[2] Calculated by dividing the width by the length of each of 100 leaflets and multiplying the average of these ratios by 100. The leaflets were taken from the fourth leaves from the tops of the stems, and one leaflet, the distal left lateral, was taken from each leaf. Since the potato leaflet is asymmetrical, the length was determined by taking the average of the measurements from the apex to the base of each respective lobe. This is a modification of the method described in the following work: SALAMAN, R. N. POTATO VARIETIES. 378 pp., illus. Cambridge, 1926. (See pp. 163-170.)

[3] RIDGWAY, R. COLOR STANDARDS AND COLOR NOMENCLATURE. 43 pp., illus. Washington, D. C. 1912.

[4] Average of measurements of 100 tubers, each of a weight of approximately 8 ounces (223–233 gm.).

[5] Calculated by dividing the width of each of 100 tubers by the length and multiplying the average of these ratios by 100. The data used for calculating the indexes were taken from the same measurements as those used to designate the dimensions of the tubers.

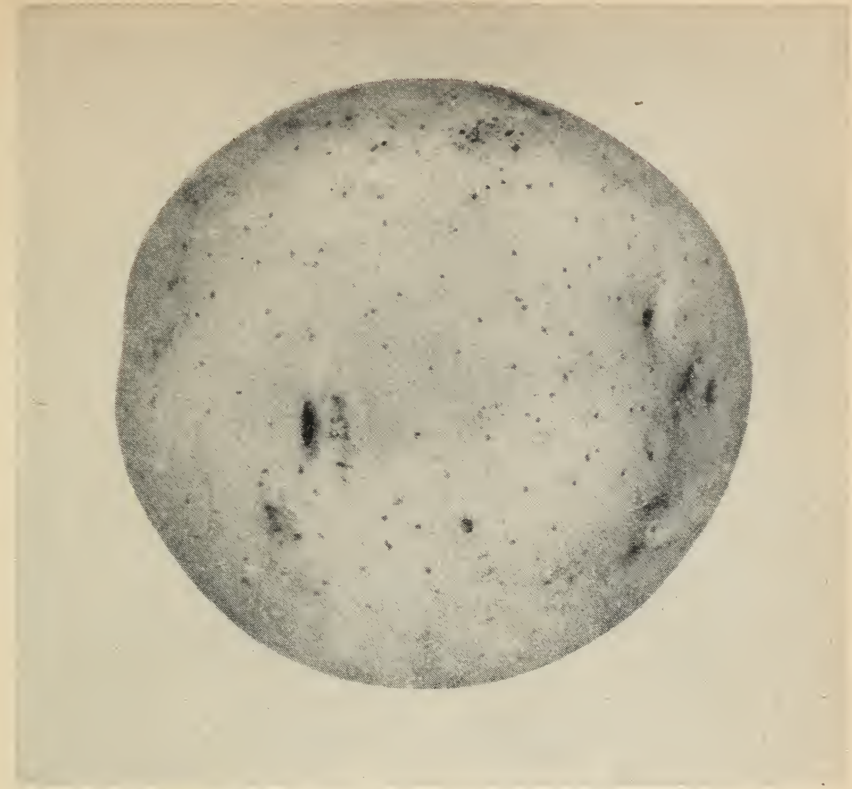

Figure 1.—An ideal tuber of the Pawnee variety.

CHARACTERISTICS

The Pawnee potato has been under observation and test at Greeley, Colo., for 7 years, during which time it has produced tubers of better appearance than the leading commercial varieties grown in the district, and generally it has matured before time for a killing frost. The tests made in cooperation with the Bureau of Home Economics, United States Department of Agriculture, showed that the cooking quality of Pawnee grown at the Colorado Potato Experiment Station is good. In this respect it compared favorably with Triumph, Rural New Yorker No. 2, and Katahdin, the leading commercial varieties grown in the Greeley district.

In the test at Presque Isle, Maine, the Green Mountain and the Pawnee were both high in cooking quality, but the former was slightly better. The Pawnee was judged almost identical with the Irish Cobbler, however, and significantly better than the Triumph.

The Pawnee also has good keeping quality.

The tubers are smooth, short elliptical to roundish, and have very few eyes, which are shallow (fig. 1). The variety consistently pro-

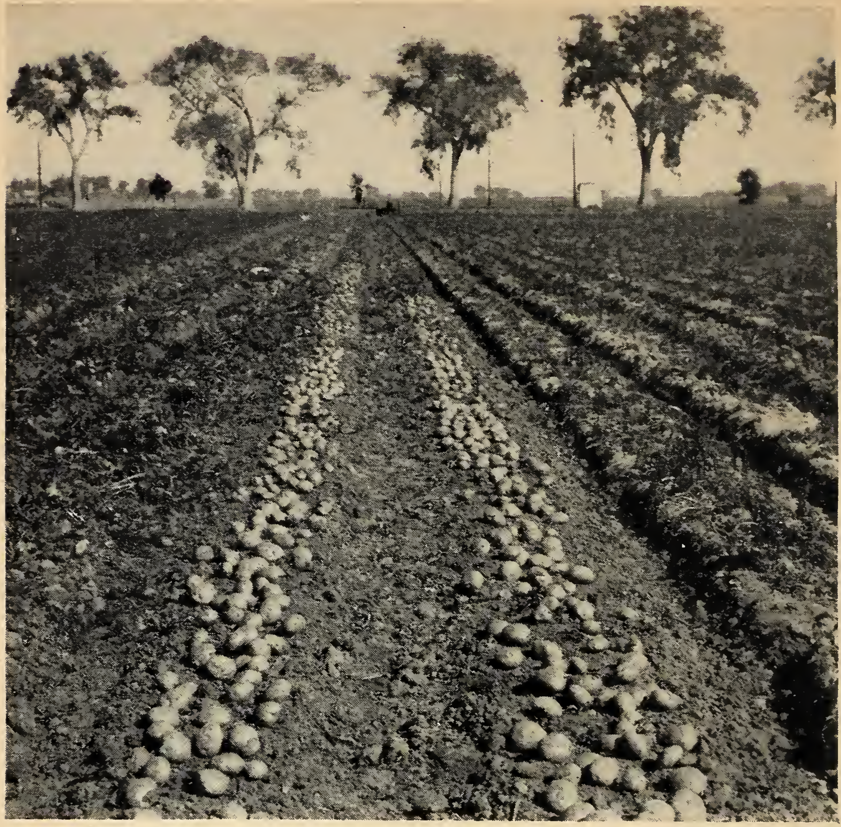

FIGURE 2.—Pawnee tubers in the field at time of harvest, Greeley, Colo. Note uniformity of size and shape.

duces a very high percentage of No. 1 tubers with relatively tough skin, a characteristic that gives it an advantage over Rural New Yorker No. 2 and Triumph, two of the leading commercial varieties in the Greeley district (fig. 2).

When the Pawnee potato is grown under irrigation on very fertile soil, the seed pieces should be spaced close together so that the tubers will not become overgrown and develop hollow heart. However, Pawnee does not develop growth cracks from rapid growth as does Rural New Yorker No. 2. It is as susceptible to fusarium wilt as Triumph, Irish Cobbler, and Rural New Yorker No. 2.

ADAPTATION AND COMPARISONS

Pawnee is well adapted to different-type soils in the Greeley district. In 1940 and 1941 Pawnee was compared with Katahdin, Triumph, and Rural New Yorker No. 2. These were planted in randomized blocks, replicated five times. The yields are given in table 1.

Table 1.—*Comparative yields of U. S. No. 1 tubers of Pawnee and other varieties, Greeley, Colo., 1940–41*

Variety	Yield per acre of U. S. No. 1 tubers			Tubers grading U. S. No. 1
	1940	1941	Mean [1]	
	Bushels	*Bushels*	*Bushels*	*Percent*
Pawnee	400.7	420.1	411.4	92.0
Katahdin	419.4	402.6	401.7	83.9
Triumph	447.1	464.6	455.9	87.0
Rural New Yorker No. 2	298.1	300.0	299.0	88.0

[1] Twice the standard error of a difference between means is 36.2 bushels per acre.

Pawnee has also been grown in different parts of the State by the Colorado Agricultural Experiment Station and has been found to be poorly adapted to high-altitude growing conditions. In 1941 a certified-seed grower of the Greeley district grew potatoes of this variety on about 1 acre. The plot was planted on June 18 and harvested on September 20; the vines were fully ripened at the time of harvest and the yield was 412 bushels per acre. The same year Pawnee was planted on five farms in the early-potato district at Gilcrest, Colo. On each of these farms it matured about at the same time as Triumph and produced a very high percentage of No. 1 tubers. Plantings made by seed growers in the late-producing area gave similar results; the tubers were of good type and attractive in appearance, with shallow eyes and relatively tough skin.

Although trials of Pawnee in other States have been rather limited, favorable reports have been received from most States where it has been tested. In Maine for the last 2 years Pawnee has produced tubers of very good type and size. Yields of Pawnee and other varieties for 1941 are given in table 2. The varieties were planted in randomized blocks, replicated 6 times with 25 hills in a replicate. Testing for 2 years in Minnesota and Iowa has given similar results. At the Aberdeen substation, Idaho, J. L. Toevs reported that Pawnee produced uniform, attractive tubers, and the yield was very good, but that many of the tubers were too large. H. C. Moore stated that when planted at Chatham, Mich., Pawnee was very promising and showed less common scab than some of the other seedlings and standard varieties.

Table 2.—*Comparative yields of Pawnee and other varieties, Aroostook Farm, Presque Isle, Maine, 1941*

Variety	Yield per acre of U. S. No. 1 tubers [1]		Variety	Tubers grading U. S. No. 1	
	Bushels	*Percent*		*Bushels*	*Percent*
Green Mountain	429	96	Chippewa	369	92
Pawnee	387	96	Houma	343	85
Katahdin	356	93	Sebago	376	92

[1] Standard error of a mean of 6 replicates is 17.6 bushels per acre. Twice the standard error of a difference between means is 49.7 bushels per acre.

DISSEMINATION

The United States Department of Agriculture has no seed of the Pawnee variety for general distribution. Upon request seed stock will be supplied to cooperating stations for tests of its adaptation to their potato-growing regions. This seed may be obtained from the Department of Horticulture, Colorado Agricultural Experiment Station, Fort Collins, Colo., or from the Colorado Potato Experiment Station, Greeley, Colo.

SUMMARY

The Pawnee potato, produced by crossing two late-maturing varieties, Rural New Yorker No. 2 and Katahdin, is believed to be a valuable medium-early variety for certain potato-growing districts. The general adaptation of this variety is not known. It is a very promising variety for both the early and the late crop in the Greeley, Colo., district, where it produces good crops of smooth tubers that are uniform in size, have shallow eyes and relatively tough skin, and are attractive in appearance. Preliminary tests indicate that it will be valuable in other States.

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